and it is clear that the cause of this exception to the general improvement must be sought in the different means by which the bacillus gains entrance to the body. In pulmonary tuberculosis the bacilli from dried sputa are inhaled with the dust, and if the public could be brought to realize the danger and the duty of abstaining from expectorating save into fire or water, phthisis might almost be abolished.

The mesenteric or intestinal form of the disease is set up by the ingestion of the living bacilli; it is rare in the adult except as secondary to phthisis—a self-infection through swallowing the sputa; the facts that adults do not suffer from it to any extent, and that infants do not eat meat, are sufficient, apart from the evidence of experiments, to show that this increase cannot be ascribed to the use of the flesh of tuberculous animals; but though mammary tubercle is extremely rare in the human female, it is frequently met with in the cow, when the milk sooner or later contains bacilli which rapidly multiply in it. Such milk might be taken with impunity into a perfectly healthy stomach; but infants—constantly liable when brought up by hand to gastro-intestinal catarrhs or other disturbances—are easily infected. There is no doubt that the number of infants fed throughout at the mother's breast is becoming less every year, and this increase of intestinal and mesenteric tubercle is concurrent with the increasing consumption of cow's milk. No doubt it could be taken with impunity if boiled, and this simple precaution would probably be the means of saving some 10,000 lives annually, or 12,000 at the least, if we include tubercular meningitis, which is, as a rule, secondary to tabes. Strict inspection of all cow-sheds, the enforcement of cleanliness, adequate ventilation, etc., and the gradual killing off of all diseased animals, with their separation meanwhile from the perfectly healthy, might well be undertaken by the authorities. But the lecturer believed that notification of tuberculosis in the case of man, with the consequent loss of employment, would be attended with disastrous results to the individual and indirectly to society, would lead to concealment and neglect of treatment while the disease is still curable, and would thus defeat the intention of the law. But the public should be educated in the etiology of tuberculosis and in the means for its prevention and cure, in the proper disposal of the expectoration of phthisical persons and the necessity for the sterilizing of all milk—at any rate of that employed in the feeding of infants; while the provision in every district of sanatoria for the treatment of cases of tubercular disease still capable of cure, and of hospitals for such as are hopeless and who, owing to their circumstances not permitting of the necessary degree of isolation, are a standing danger to their families, are in the highest degree desirable.

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study of the subject, soaps, whether hard or soft, possess a fairly high disinfectant power, which is not to be attributed either to the base or to the fatty acid, but to the resulting combination of the two. The free alkali content is ordinarily such that even in concentrated soap solutions it can exert no disinfecting action whatever. Since filtered and unfiltered soap solutions have the same power, it may be concluded that the disinfectant property resides alone in the soluble portions, and this property is naturally diminished by anything which tends to precipitate the soap from its solution. It is also influenced by temperature in two ways: first, by reason of the fact that disinfectants in general are more active at high temperature; and, second, that increase in temperature causes increased solubility. As the property is inherent in the salts of the fatty acids, anything which diminishes their relative amount, as foreign substances or high percentage of contained water, lessens the power of the soap to disinfect; hence the so-called rosin soaps which are very common in the market have proportionately less action the higher their percentage of salts of the rosin acids.

In the ordinary washing of clothes soaps can exert but little disinfection, because of the many factors which cause a diminution of their power, among which the hardness of the water is one of the most important. In general, if one is obliged by lack of other means, or on account of economy, to employ soap in the practice of disinfection, it is best to avoid soft soaps, since they contain a large amount of water, besides glycerin and all the impurities of the fats and alkali from which they are made—objections which do not apply in the same degree to hard soaps. One will do well to distrust the ordinary colored soaps, especially the green, yellow, and brown, which are more than likely to contain rosin. Those on which one may most safely depend are the hard white and marbled Marseilles, or castile soaps, since they contain no rosin and but little water. If soaps must be employed as disinfectants they should be used in concentrated solutions at a temperature of 30°–40° C., and the objects treated should be immersed a number of hours therein.

Tuberculous Meat.—According to the official returns of the Leipzig abattoir for 1897, 36.40 per cent. of the 27,191 cattle slaughtered were more or less tuberculous. Nearly half (48.09 per cent.) of the cows were affected, while but a fifth (20.49 per cent.) of the bullocks and heifers gave evidence of the disease. Notwithstanding the large number of infected animals, only 2.08 per cent. were totally condemned as food. Of those more or less infected but passed as fit for food—that is, 97.92 per cent., all but a very small number were allowed to be sold without any restrictions after the removal of the organs affected. The balance, 5.73 per cent., were first sterilized or sold as of second quality. Only eight sheep out of 49,559 were tuberculous. Of the swine, 132,062 in number, 2.78 per cent., and of the calves, 67,961 in number, 0.20 per cent., were more or less diseased.

Scarlet Fever in Swine.—The disease known as rothlauf in Germany, and rouget in France, is in England (and America?) often called pig scarlatina, on account of the bright-red eruption on the skin; but incorrectly so, since the constant presence of lesions of the intestine show it to be a disease *sui* *generis*, and more akin to typhoid. But BEHLE has reported a remarkable and, so far as we know, unprecedented instance of the participation of swine in an outbreak of scarlatina in Germany. He states that while the children at a number of farm-houses and cottages were suffering from scarlatina of a severe type, the pigs were attacked by a highly infectious and fatal fever, the symptoms and post-mortem appearances of which were identical with those of scarlatina in man, viz., angina, erythema, followed, in those that recovered, by desquamation, œdema of the extremities, albuminuria, uræmia, and acute nephritis. A healthy animal at a house where none of the family had been attacked, having been inoculated with the blood of a child suffering from scarlet fever, died at the end of a week with symptoms and lesions indistinguishable from those of the human disease and from those of the pigs that had presumably contracted it from the inhabitants, though whether through actual contact or, as is highly probable under the conditions of village life, through the ingestion of their excreta, we have no means of knowing.

[There is little doubt that cows are susceptible to scarlatina and that the disease may be reconveyed to man by the consumption of their milk, but owing to histological differences the external appearances are greatly modified. The susceptibility of any of the lower animals to diseases proper to man, as of rats to the plague and of cats to diphtheria, is of great interest not only from a purely scientific stand-point, and as bearing on the propagation of the infection, but as affording opportunities of studying the etiology and prophylaxis of the disease *in corpore vili*. This can be done most satisfactorily when the character of the skin, etc., permits of the morbid processes taking the same appearances, which is rarely the case. One cannot reasonably expect a finely punctated erythema on the hairy hide of the cow, and it is impossible to imagine the eruptions of scarlatina or the pustules of smallpox on that of an elephant or rhinoceros, though one may conceive of these animals being susceptible to the virus.—E. F. W.]

PATHOLOGY AND BACTERIOLOGY.

UNDER THE CHARGE OF

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Scarlet Fever.—PEARCE ("Scarlet Fever: Its Pathology, Histology, and Bacteriology," *Medical and Surgical Reports, Boston City Hospital*, 1899) has made thorough gross, histological, and bacteriological examinations in twenty-one cases of scarlet fever in which a complete post-mortem examination was possible. Nothing was observed which would indicate the etiology of the disease.

The only constant gross change found was a hyperplasia of the lymphoid tissue in every part of the body. This hyperplasia was found not only in the large subcutaneous and mesenteric lymph-nodes, but also in the small lymph-nodules of the mucous membranes. It was particularly prominent in the Peyer's patches and solitary lymph-nodules of the intestine.

A false membrane on the tonsil was seen in a few cases. This membrane was always due to the streptococcus.

The micro-organisms producing secondary inflammatory lesions were, in the order of their frequency, the streptococcus pyogenes, the staphylococcus pyogenes aureus, and the pneumococcus. The streptococcus was also found most frequently in the general infections and on the mucous membrane of the throat and nose.

The more important inflammatory complications observed were acute inflammation of the middle ear, with or without extension to the mastoid cells; suppuration of cervical lymph-nodes; acute pleuritis; inflammation of the antrum of Highmore. The less frequent complications were abscess of the lung; ulceration and abscess-formation of the upper respiratory tract; acute endocarditis; inflammation of the sphenoidal sinus, and metastatic abscesses of the kidney.

Of these inflammations the antrum of Highmore is the most interesting. It was found in three out of the four cases in which the accessory sinuses of the nose were examined by the Harke method. The most common complications were broncho-pneumonia and suppuration of the middle ear, each of which occurred in eight cases.

The histological report, which forms the bulk of the paper, is very complete. Thirty-two different organs and tissues were examined. The histological examination of the skin, tongue, and mucous membrane of the mouth and pharynx showed the changes in these tissues to be inflammatory rather than vasomotor. The most marked changes were seen from the fifth to the ninth days. The bloodvessels were congested, the lymphatics dilated, and the epithelial and subcutaneous tissues, particularly the former, infiltrated with large numbers of polymorphonuclear leucocytes. The changes were most marked in the tongue, particularly in the papillæ, a fact which explains the prominence of these bodies seen clinically.

The lesions in the gastro-intestinal tract consisted in degenerative changes in the epithelium and of proliferative and degenerative processes in the lymph-nodules similar to those in lymphoid tissue elsewhere.

The changes in the heart-muscle were fatty degeneration and fragmentation.

In the liver two forms of focal lesions occurred. One was due to accumulations of phagocytic cells in the capillaries, leading to occlusion of the vessels and to necrosis of the included liver-cells, and might occur in any part of the lobule. The other was due to a necrosis of liver-cells in the centres of the lobules, followed by an infiltration with leucocytes.

The changes in the spleen consisted of proliferation of the endothelial cells in the centres of the Malpighian bodies and of the endothelial cells lining the blood sinuses. In the lymph-nodes generally a similar proliferation was observed in the lymph-nodules and lymph-sinuses. These newly-formed cells were generally markedly phagocytic. There also occurred in the spleen and lymphoid tissue generally an abundant formation of plasma cells from lymphoid cells. In some cases large numbers of plasma and lymphoid cells were found in the veins of the spleen just beneath the endothelium.

From a study of the kidneys of these cases the writer concludes that acute interstitial nephritis is the most important early renal lesion of scarlet fever. It was well marked in four cases, dying late in the second or early in the third week of the disease. In four other cases slight interstitial changes were noted. No glomerular lesions were found. This may be explained by the fact that of the cases examined only one died after the sixteenth day.

The most marked cell change observed was the production of plasma cells in the spleen, lymph-nodes, and lymphoid tissue generally throughout the body. In certain cases these cells were present in large numbers in the circulation and in the tissues of the kidney and lung—a process analogous to the one mentioned by Councilman as occurring in diphtheria. A less frequent cell change was the production of phagocytic cells from the endothelium of lymphoid tissue generally and from the endothelium lining the lymph-sinuses of the lymph-nodes, and the bloodvessels of the spleen and liver—a process which, although less marked, is analogous to the general proliferative changes described by Mallory as occurring in typhoid fever.

The paper is illustrated by twelve photomicrographs, of which those indicating the changes in the tongue, the veins of the spleen, the kidney, and the lymph-nodules of the stomach are the most interesting.

The writer has collected all references to the cell changes of scarlet fever. From these it would appear that, with the exception of the kidney, little work has been done on the histology of the disease.

Subcutaneous Abscesses due to Typhoid Bacillus.—PRATT (*Ibid.*) reports two cases of invasion of the subcutaneous tissues by the bacillus typhosus. In one case an abscess formed over the right olecranon one month after typhoid fever. At the operation no connection was found with the joint or periosteum. In a second case of typhoid fever a purplish, indurated swelling formed on the leg a few days before death. It contained a sero-sanguineous fluid, from which the bacillus typhosus was isolated in pure culture. In the literature he found three cases of abscesses in the subcutaneous tissue and six in muscle-tissue. From an analysis of all the cases he draws the following conclusions: Abscesses in the soft parts due to the bacillus typhosus are usually single. They appear during the latter weeks of fever or early in convalescence. They run an acute course. In this respect they contrast strongly with post-typhoid bone lesions, whose course is characterized by chronicity and a marked tendency to recurrence. They produce few constitutional symptoms. They heal rapidly after incision.

Gonorrhœal Septicæmia and Ulcerative Endocarditis.—THAYER and LAZEAR (*Journal of Experimental Medicine*, January, 1899) add to the literature the report of another case of the above condition, and review the subject of secondary gonorrhœal infections.

In 1895 Thayer and Blumer reported a case of ulcerative endocarditis in which they obtained during life a pure culture of the gonococcus from the blood. At the autopsy the same micro-organism was found in the thrombi upon the mitral valve. The organisms did not grow upon agar-agar and ox-blood serum used as culture media. In the uterus and vagina characteristic gonococci were found.

Previous to this observation nearly a score of cases of acute ulcerative endocarditis had been reported as occurring in the course of gonorrhœa. In several of these cocci, corresponding to the morphology and staining characteristics of gonococci, were found in smears from the valves, but were not grown on culture media.

Thayer and Blumer, by their cultures taken during life, were the first to demonstrate a gonococcal septicæmia.

In the case which Thayer and Lazear now report, the gonococcus was obtained in pure culture on three of the four days immediately preceding death. Two c.cm. of blood were drawn from the median basilic vein and mixed with 4 c.cm. of agar-agar. The growth appeared after forty-eight hours and was abundant. Transplanted upon human blood-serum there was a growth; upon ox-blood serum, gelatin, and bouillon, none.

At the autopsy was found a subacute ulcerative and vegetative tricuspid endocarditis, acute sero-purulent pleuritis and pericarditis, a pulmonary infarct, and subacute hemorrhagic glomerular nephritis. Diplococci corresponding to the gonococcus in morphology and staining reaction were found in smears from the urethra, the vegetations of the tricuspid valve, and the pleural and pericardial exudate. Upon human blood-serum a growth of the gonococcus was obtained from the tricuspid valve, pericardial exudate, and heart's blood.

The writers conclude their report with a review of thirty-two cases in which satisfactory pathological records were made of gonorrhœa with fatal cardiac complications. Of these thirty-one were cases of ulcerative endocarditis and one of perimyocarditis alone.

In many of these micro-organisms corresponding to the gonococcus were found in the vegetations. In three the gonococcus was obtained after death in cultures from the vegetations. In one of these three cases a piece of softened thrombus introduced into the human urethra produced in four days a characteristic gonorrhœa with gonococci in the discharge (Lenharz).

Finally, in Thayer's two cases the gonococcus has been obtained in cultures from the blood during life.

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